MONTHLY REPORT

25X1 [redacted]

PAR 216

1 May 64

SUBJECT: Exposure of Photographic Materials with Lasers

TASK/PROBLEM

1. Determine the manner and degree of the interaction of present and predictable future photographic films with coherent radiation from laser sources in the red and near IR spectrum ranges.

DISCUSSION

2. The preliminary results obtained with both [redacted] 25X1

25X1 [redacted] helium-neon gas lasers are the following:

a. There is adequate energy available to flash panchromatic film. Exposure times of 1/100 to 1/200 second produce flash densities greater than 1.0, using a divergent beam.

b. It seems impossible to produce a uniform flash that is free from mottle. The pattern varies with the two ends of the laser and appears to come from surface imperfections in the partially reflecting end mirrors.

c. The mottle in the flashed film can be eliminated by inserting a ground glass in the light path. Measurements will be made to see whether the ground glass makes the light beam incoherent which would destroy any benefit from laser illumination.

d. Dust particles on the diverging optics produce enlarged Newton Rings. Special care may be required to eliminate dust and scratches on any optics in the laser beam.

e. Process gamma from laser illumination is about one-half of the value expected for Type 8401 film in standard tungsten illumination. The reason for this is not known.

PLANNED ACTIVITIES

3. Contact and optical printing experiments will be started. Further testing of the lower gamma results will be conducted.